

New Innovations in Soil Survey Publications

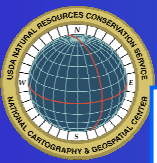
Nathan McCaleb

Soil Support Branch Chief

National Cartography and

Geospatial Center

Fort Worth, Texas



National Cartography and Geospatial Center

Executive Assistant
Office Assistants - 2

Tommie L. Parham

Director
Nat'l Carto. & Geospatial Ctr.

Nathan McCaleb

Branch Chief
Soil Survey Support

Cartographers -- 11
Soil Scientists -- 5
Cartographic Technicians 18
Printing Specialist

Jerry Harlow

Branch Chief
Resources Inventory
Support

Natural Resource Spec. - 4
Cartographers - 2
Cartographic Technicians - 2
Physical Scientist
Soil Conservationists - 2
Technical Information
Specialist
Remote Sensing Specialist
GPS Coordinator

Victor McWilliams

Branch Chief
Center Support

Cartographers - 2
Cartographic Technicians
- 10
Computer Specialists - 2
Computer Engineers - 3
Offset Press Operators - 3
Computer Term
Employees - 2

Steve Nechero

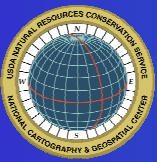
Branch Chief
Geospatial Database

Cartographers - 7
Technical Information
Specialists - 2
Cartographic technicians -
4
Soil Scientist
GIS Specialist
Conservation Agronomist
WWW Specialist
Soil Conservationist

Paul Fukuhara

IT & GIS
Analyst

Tech. Info. Spec-



National Cartography & Geospatial Center

Major Emphasis FY2002

USDA-NRCS-NCGC

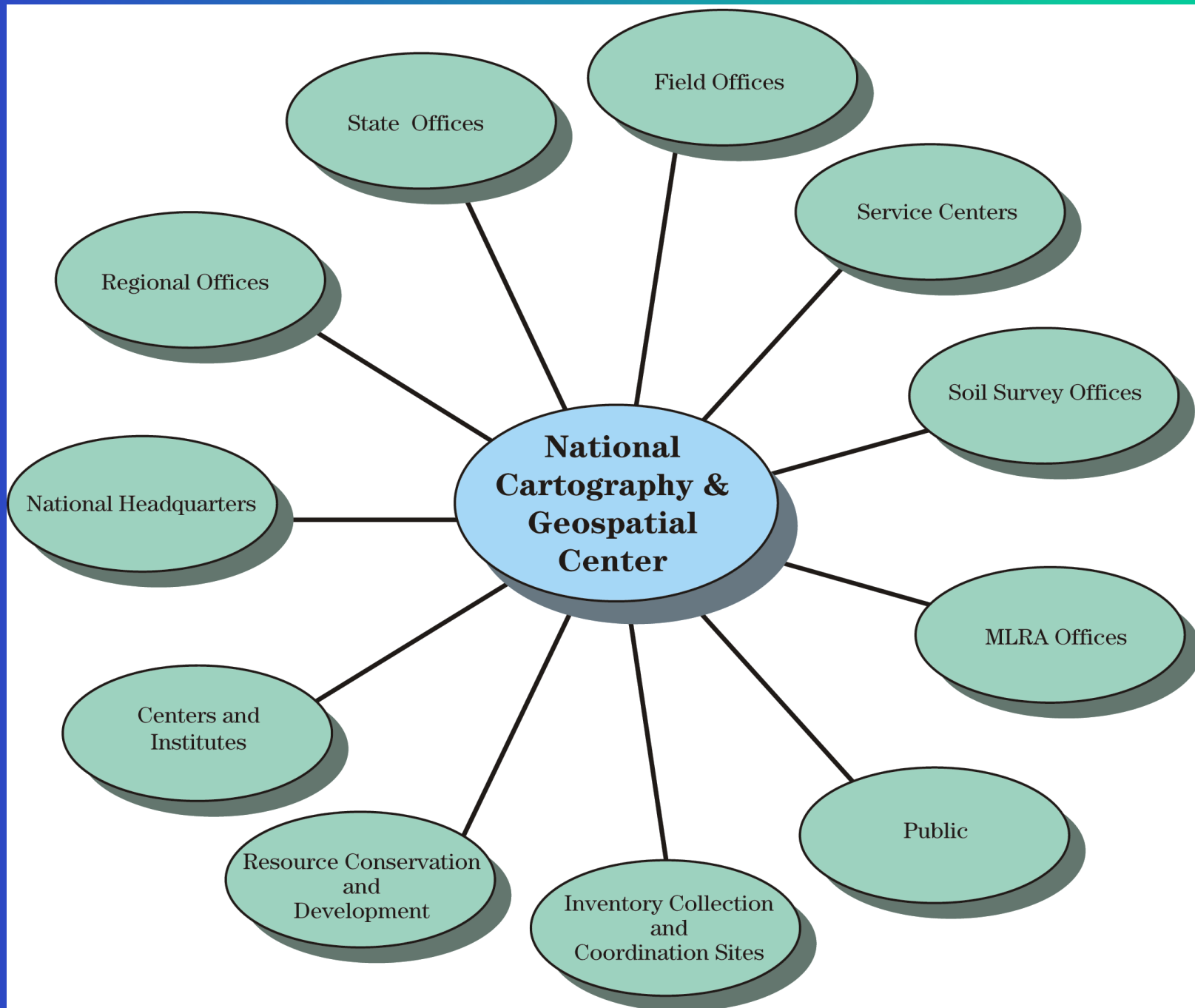
- **ESRI-Authorized Learning Center**
- **3 ESRI-Authorized Trainers at NCGC**
- **Geodata Refreshed ???**
- **Announce NRCS Gateway Delivery Point**
- **Partnership with FSA-APFO**
- **NRI & Soils Support**
- **GIS Helpdesk Support**
- **Minimizing Security Risks**
- **USDA GPS Contract Support and Training**
- **FGDC Clearinghouse**
- **Pilot and Implement Geospatial Data Warehouse/Gateway**
- **GeoData Replication**
- **GPS, Dig. Camera, PDA, Mobile Comp.**
- **Remote Sensing Support to NRCS**



NCGC provides technical leadership for NRCS in...

- **Cartography**
- **Remote Sensing**
- **NRI Support**
- **Global Positioning Systems (GPS)**
- **Geographic Information Systems (GIS)**
- **Soil Survey Support**
- **Archiving of Information**
- **Technical Publication Edits and Reviews**

USDA-NRCS-NCGC





USDA-NRCS-NCGC



United States Department of Agriculture

Introduction to ArcView G Module 1



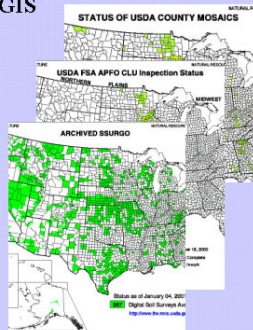
Draft - February 15, 2001

Developed for the NRCS
by ESRI and National Cartography and Geospatial
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INTRODUCTION Components of a GIS



PEOPLE → Capture
Store
Manipulate
Analyze
Display

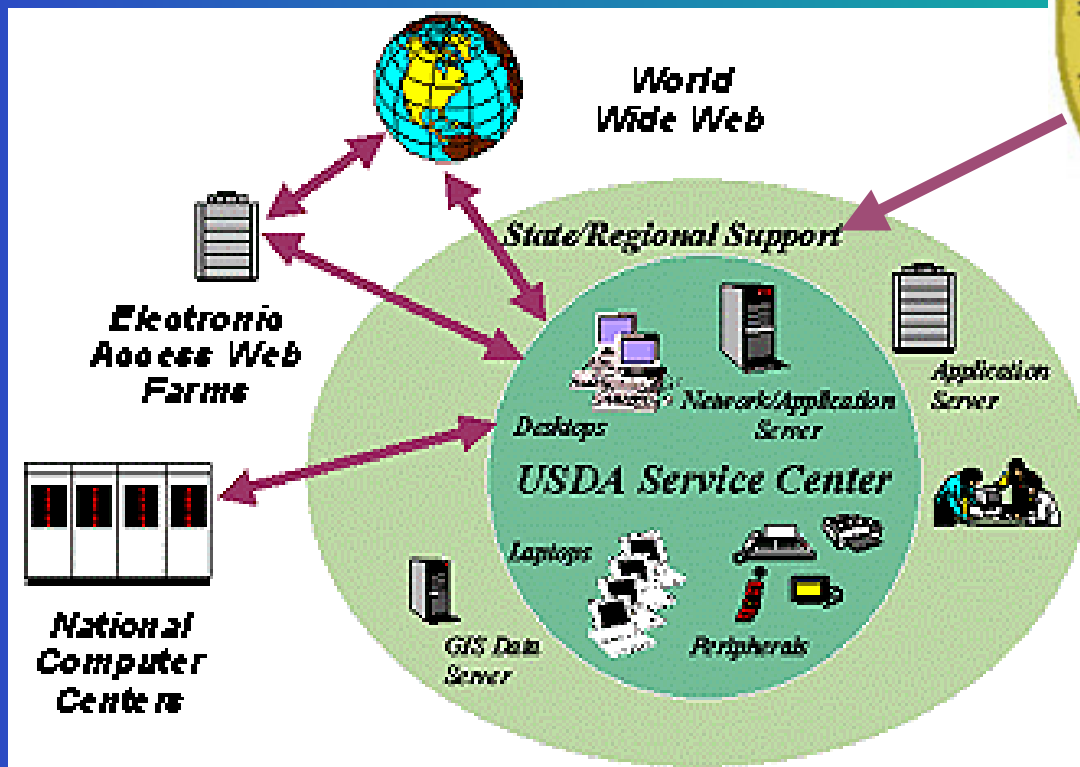
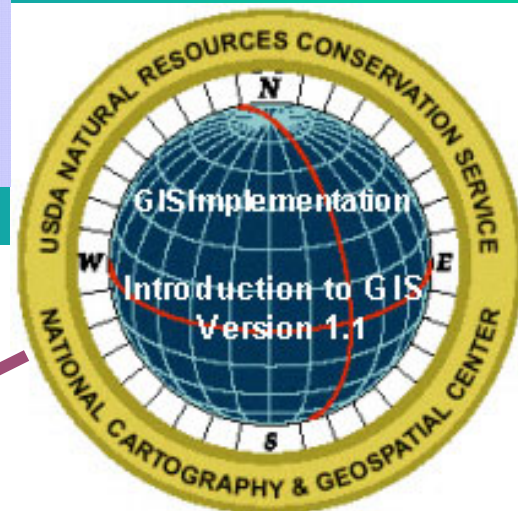


Customer Service Toolkit

Wetland Determinations
Toolkit

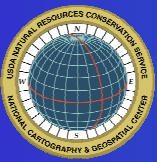


SOFTWARE
HARDWARE
PROCEDURES



Approximately 200
CD-ROMs
delivered to State
and Field Offices.

How many
reproduced in the
states?



Status of Soil Survey Mapping and Publications

Current status/trends

• Mapping/updating:

- Mapping/updating about 24.6 million acres a year (last 8-year average)
- Refresh rate of once every 94 years.

• Publishing:

- publishing about 45 surveys per year (average in the 90's),
- Refresh rate of about once every 73 years
- Many of our published products are out of print.



Status of Soil Survey Databases and SSURGO

Database:

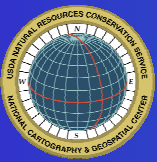
- about 1188 legends certified for distribution in NASIS
- this is only a third of the surveys

SSURGO:

- 1265 surveys certified and archived for distribution, but the initiative is funded at ½ the recommend level
- Take until the end of 2009 to complete.

Need for new products:

- traditional soil surveys on CDs, Interactive GIS type soil surveys on CD, web products, pixel based soil survey, 3D-Products, etc.,
- We are in the initial stages of production.



**Project soil surveys with mapping complete
and updated soil surveys with a correlation
date.**

**(From Soil Survey Schedule, NCGC Report,
Editor's database, DMF records and NPSS
spreadsheet)**

5/01/02

Surveys with maps at NCGC or complete *:	152
Surveys with no detailed maps at NCGC:	363
Total in Publication Pipeline	515
* Includes 33 with maps to printer, but not text	



Publication Pipeline

(From Soil Survey Schedule, NCGC Report, Editor's database, DMF records and NPSS spreadsheet)

5/01/02

USDA-NRCS-NCGC

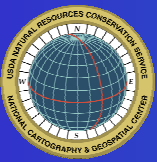
Narrative	Total	Pub_Status
Maps and Text sent to Printer	25	A Sent to GPO
Maps sent to Printer, Text will be sent when Maps approved	33	A_Maps to Printer
Ready to send to GPO	5	A_Ready for GPO
Text ready, Maps at least to NCGC	50	B_Nearly Ready
Maps ready, Text at least to English editor	4	B_Nearly Ready
English Edit Complete, Maps at least to NCGC	13	B_Nearly Ready
Maps at NCGC, Text to editor, neither complete	13	C_Kind of Close
Maps Complete, Text not to editor	0	D_Part Ready
Text Ready, Maps not to NCGC	36	D_Part Ready
English Edit Complete, Maps not to NCGC	27	D_Part Ready
Text to editor, Maps not to NCGC, neither complete	34	E_Distant
Maps at NCGC, Text not to editor, neither complete	28	E_Distant
Maps not at NCGC nor Text to editor, SSURGO Archived	75	F_Distant
Maps not at NCGC nor Text to editor	197	G_Distant



Improvements to the Process

- Reduce the number of hard copies printed for each survey and supplement with CDs or other electronic media
 - Current average is around 1500 copies
 - Reduce to 500 copies and 1000-2000 CDs
 - Significantly reduces cost of printing allowing for more soil survey areas to be printed

USDA-NRCS-NCGC



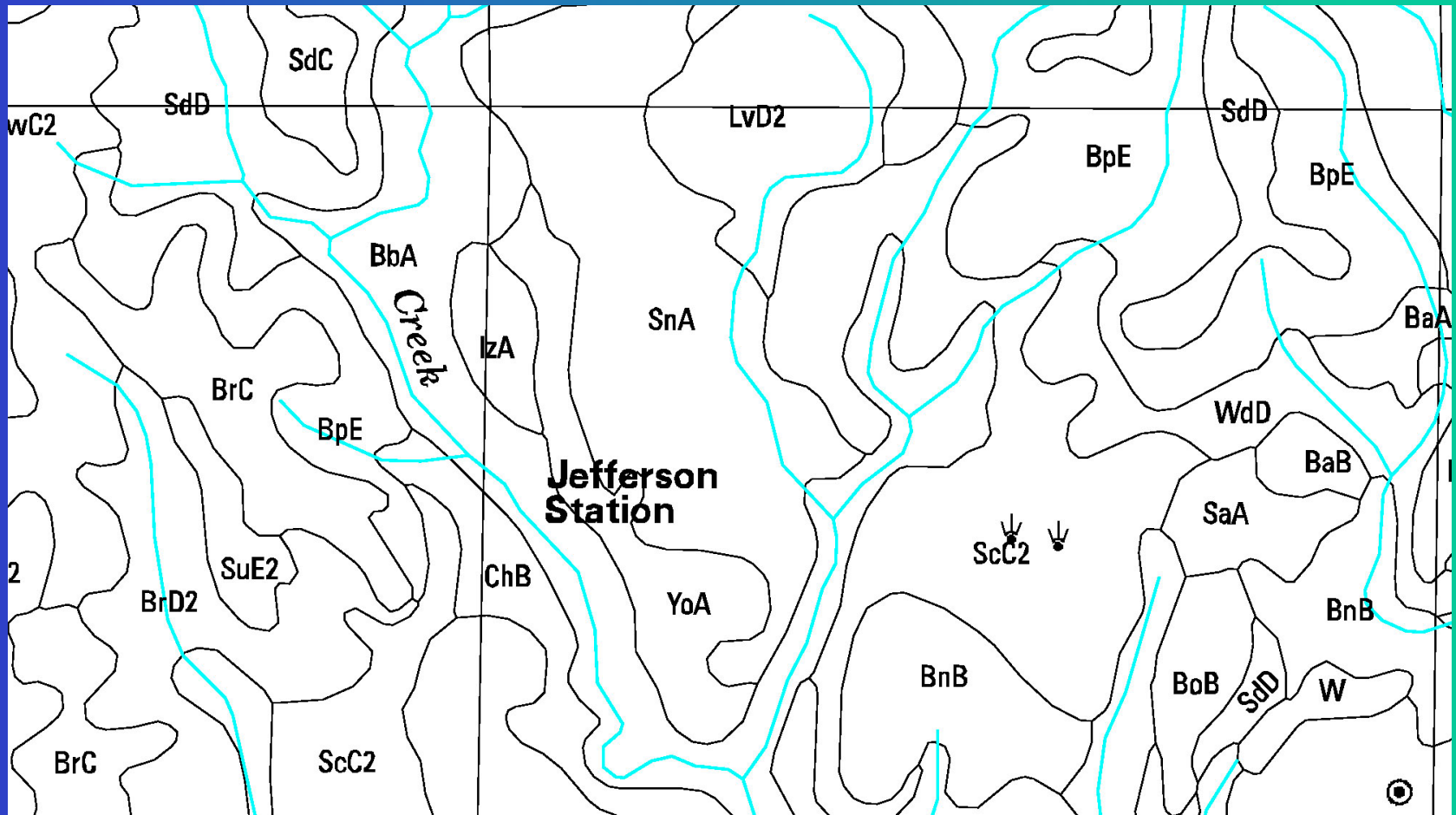
Improvements to the Process

- Automate as many of the publication processes as possible
 - Digital Map Finishing
 - General Soil Maps
 - Soil Survey Manuscripts



Digital Map Finishing

USDA-NRCS-NCGC

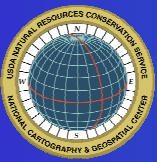




Digital Map Finishing

USDA-NRCS-NCGC





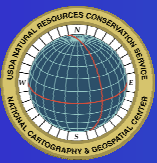
Improvements to the Process General Soils Maps

- NSH cites STATSGO as base for GSM
- 93 products pending at NCGC, 2 are STATSGO based
- GSMs are averaging 80+ staff hours to process to the point of making a negative ready to send to printer

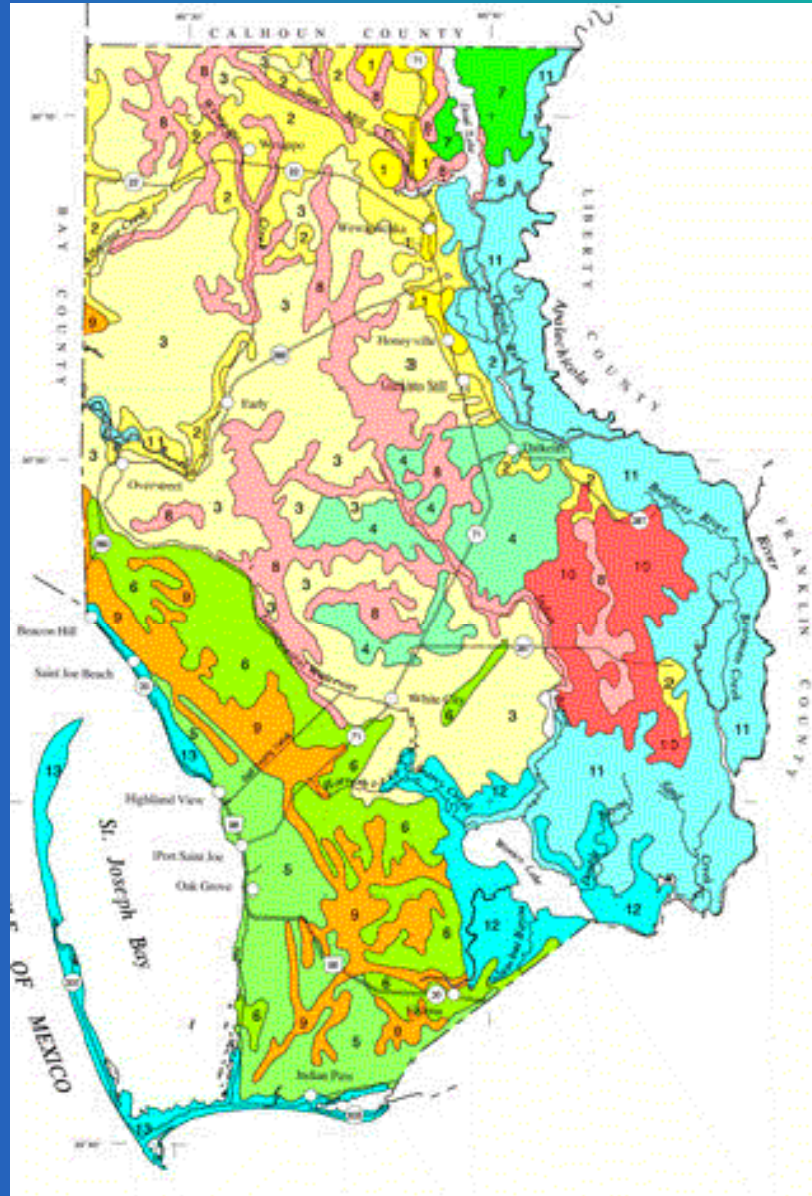
USDA-NRCS-NCGC

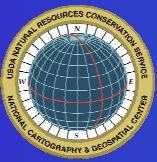






GENERAL SOILS MAP – SSURGO

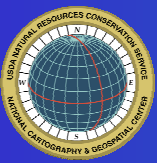




Soil Surveys on CDs and other media

- CD Summit and report
- Multiple formats available

USDA-NRCS-NCGC



Pdf example -- new





Html example

Soil Survey of Napa County, California - Main - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Location: file:///D:/index.html

Instant Message WebMail Contact People Yellow Pages Download Channels

Introduction

General nature of the county

How this survey was made

General soil map for broad land use planning

Descriptions of the soils

Use and management of the soils

Soil properties

Formation, morphology and classification of the soils

Interpretive maps

Guide to mapping units

Introduction - Index to map sheets

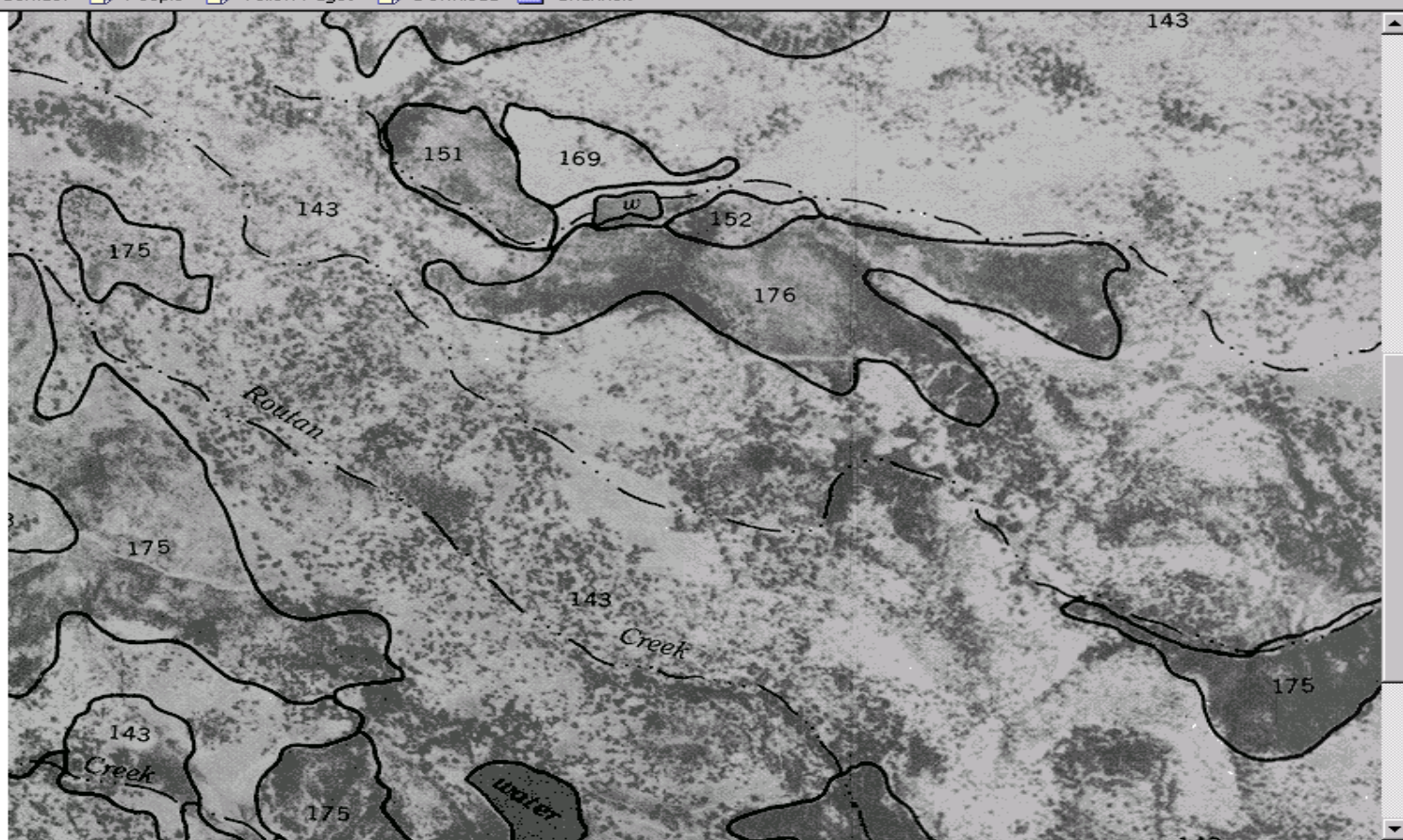
Summary of tables

References

Glossary

Related Links

Return to Main Page



file:///D:/rockoutcrop.html#mu176



Microsoft A...

Inbox - Micr...

Microsoft P...

My Computer

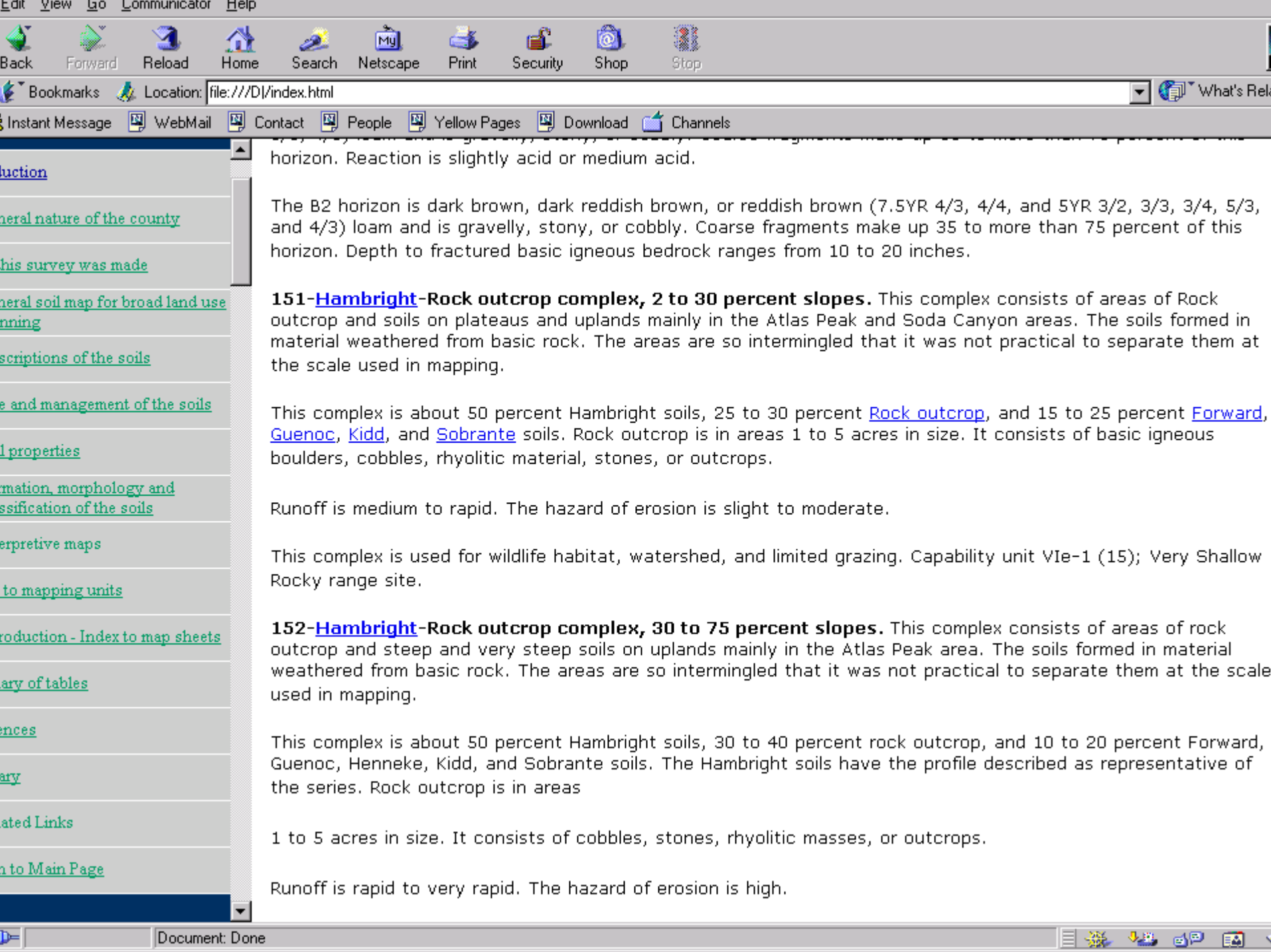
D:\

D:\maps

Acrobat Re...

Soil Surv...

2:15 PM



[Introduction](#)

[General nature of the county](#)

[This survey was made](#)

[General soil map for broad land use](#)
[Mapping](#)

[Descriptions of the soils](#)

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[Soil properties](#)

[Formation, morphology and](#)
[classification of the soils](#)

[Interpretive maps](#)

[Soil mapping units](#)

[Introduction - Index to map sheets](#)

[Summary of tables](#)

[References](#)

[Glossary](#)

[Related Links](#)

[Link to Main Page](#)

horizon. Reaction is slightly acid or medium acid.

The B2 horizon is dark brown, dark reddish brown, or reddish brown (7.5YR 4/3, 4/4, and 5YR 3/2, 3/3, 3/4, 5/3, and 4/3) loam and is gravelly, stony, or cobbly. Coarse fragments make up 35 to more than 75 percent of this horizon. Depth to fractured basic igneous bedrock ranges from 10 to 20 inches.

151-[Hambright](#)-Rock outcrop complex, 2 to 30 percent slopes. This complex consists of areas of Rock outcrop and soils on plateaus and uplands mainly in the Atlas Peak and Soda Canyon areas. The soils formed in material weathered from basic rock. The areas are so intermingled that it was not practical to separate them at the scale used in mapping.

This complex is about 50 percent Hambright soils, 25 to 30 percent [Rock outcrop](#), and 15 to 25 percent [Forward](#), [Guenoc](#), [Kidd](#), and [Sobranite](#) soils. Rock outcrop is in areas 1 to 5 acres in size. It consists of basic igneous boulders, cobbles, rhyolitic material, stones, or outcrops.

Runoff is medium to rapid. The hazard of erosion is slight to moderate.

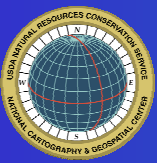
This complex is used for wildlife habitat, watershed, and limited grazing. Capability unit VIe-1 (15); Very Shallow Rocky range site.

152-[Hambright](#)-Rock outcrop complex, 30 to 75 percent slopes. This complex consists of areas of rock outcrop and steep and very steep soils on uplands mainly in the Atlas Peak area. The soils formed in material weathered from basic rock. The areas are so intermingled that it was not practical to separate them at the scale used in mapping.

This complex is about 50 percent Hambright soils, 30 to 40 percent rock outcrop, and 10 to 20 percent Forward, Guenoc, Henneke, Kidd, and Sobranite soils. The Hambright soils have the profile described as representative of the series. Rock outcrop is in areas

1 to 5 acres in size. It consists of cobbles, stones, rhyolitic masses, or outcrops.

Runoff is rapid to very rapid. The hazard of erosion is high.



GIS_ArcExplorer example

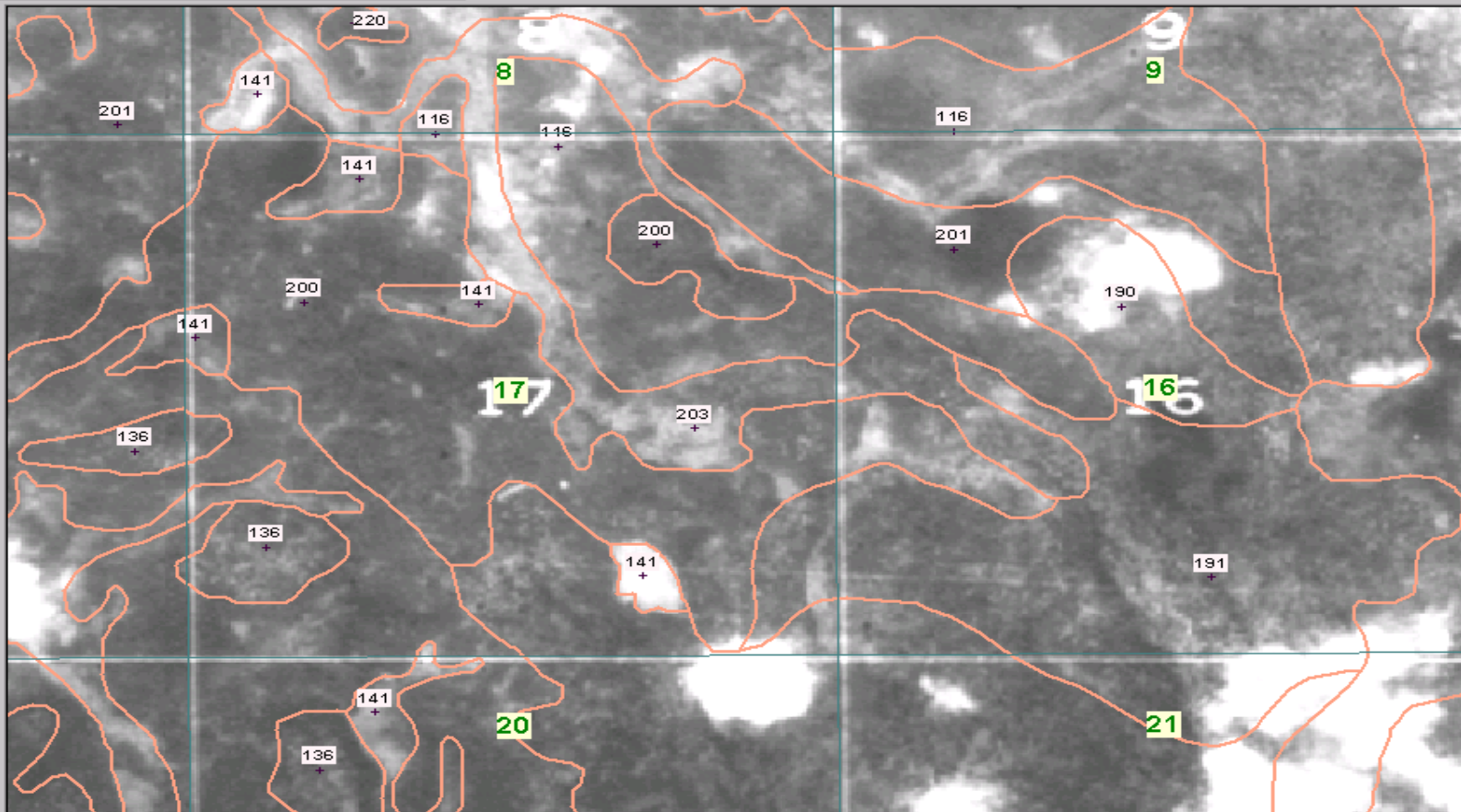
ArcExplorer - default.aep

File Edit View Theme Tools Help



Local WWW

- ☒ CITIES
- ☒ TOWNSHIPS
- ☒ SECTIONS
- ☐ DETAILED ROADS
- ☒ MAJOR ROADS
- ☒ QUADRANGLES
- ☒ SOIL_LABELS
- ☒ SOILS
- ☐ LAKES & RIVERS
- ☒ RELIEF (Image)
- ☒ ORTHOIMAGE (Image)



X: 555660.3384
Y: 2826746.9368

1:15,828


One Inch = 1320 Feet
Feet 1000 2000 3000 4000 5000

Zoom Out tool activated

No Active Theme

Start Microsoft ActiveSync Inbox - Microsoft Outlook Microsoft PowerPoint - [...

ArcExplorer - defau... 2:26 PM



File Edit Document View Window Help



GIS_SOILView example

USDA-NRCS-NCGC

soivcook.doc - Microsoft Word

File Edit View Insert Format Tools Table Window Help

200% Normal Arial 12 B I U

Scale 1: 396,229.84 4,477,539.96

SoiView
County Data View Documents Window Help

CountyView

- ☒ Township Names Text
- ☒ Road Names Text
- ☐ County Soil Types

Subsection 32 View

- ☐ Misc. land & water
- ☐ Point Features
- ☐ Streams
- ☐ Lhe Features
- ☐ Section corners
- ☐ Label leaders
- ☒ Soil Types
- ☒ Cultural Labels Text
- ☒ Soil Labels Text
- ☐ Tpo
- ☒ Aerial Photo

drummer.tif

R8E R9E R10E R11E R

Harwood Kent

Compromise

Stanton Ogden

St Joseph

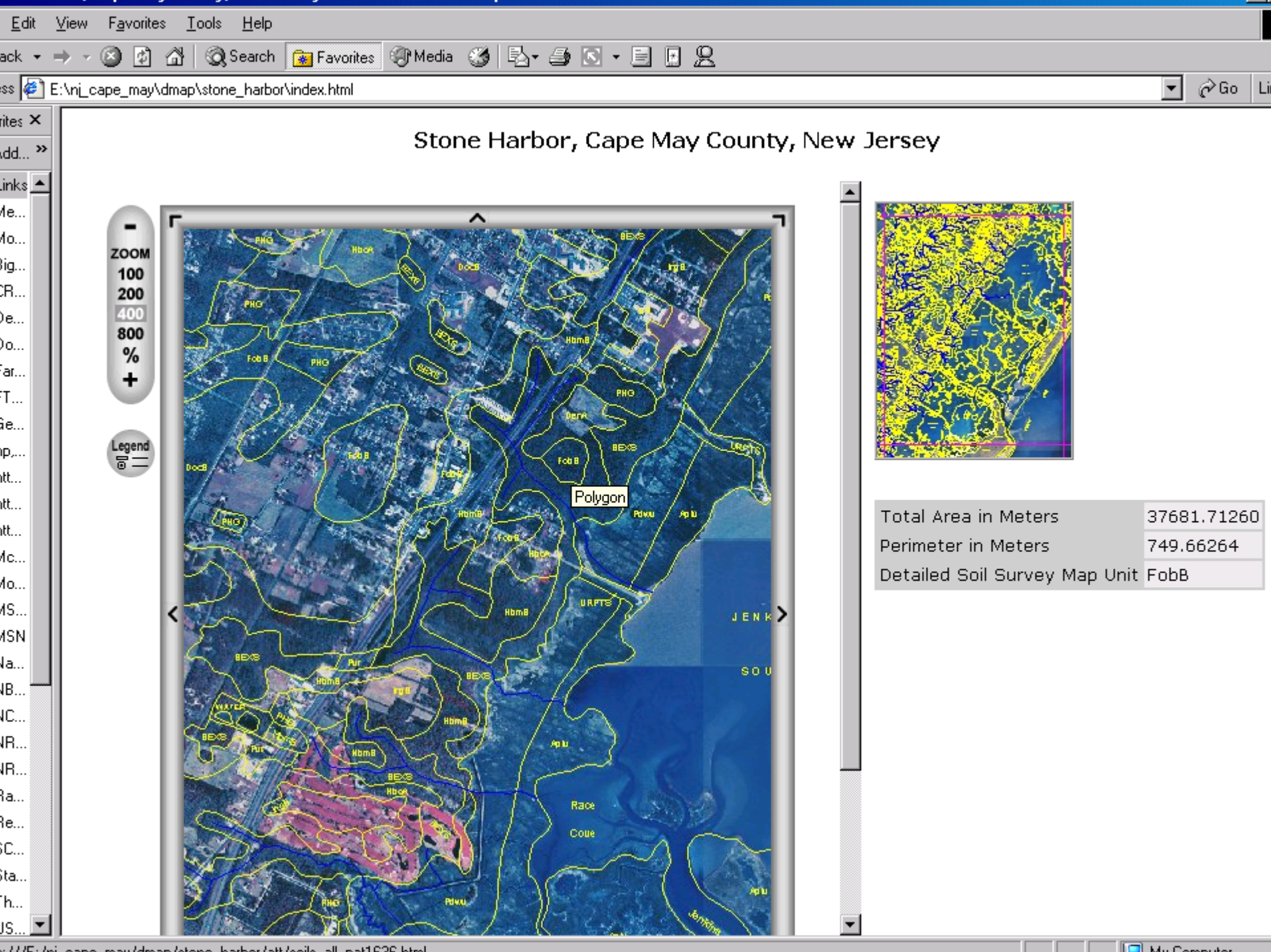
Sidney South Homer

236A 240A 240B 240C 240D 240E 240F 240G 240H 240I 240J 240K 240L 240M 240N 240O 240P 240Q 240R 240S 240T 240U 240V 240W 240X 240Y 240Z

Page 1 Sec 1 1/7 At 1" Ln 1 Col 1 REC TRK EXT OVR

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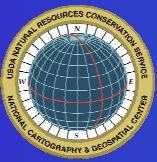
2:31 PM





Publications

- Generally speaking, IF the soils information is ready to put onto CD-ROM for distribution, it is ready to be sent for hard copy publication.
- Some of the issues to consider:
 - What constitutes an “official” soil survey?
 - If CD releases supplement the hard copy, can they be different from the hard copy, i.e.. Other thematic maps.



New Innovations and Products

- DMF issues
- Resource Data Gateway and Soils Data Warehouse
- New GIS tools

USDA-NRCS-NCGC



DMF quad overlap/DMF by Survey area

- Print 300 meter overlap on quads.
 - ◆ Soil lines over print on top of a dashed white quad neat line
 - ◆ Roads where used shown in white with fine black lines edges. Soil lines over print on top of roads.
 - ◆ Hydro - where a blue plate is used make all water polygon edges blue.

USDA-NRCS-NCGC

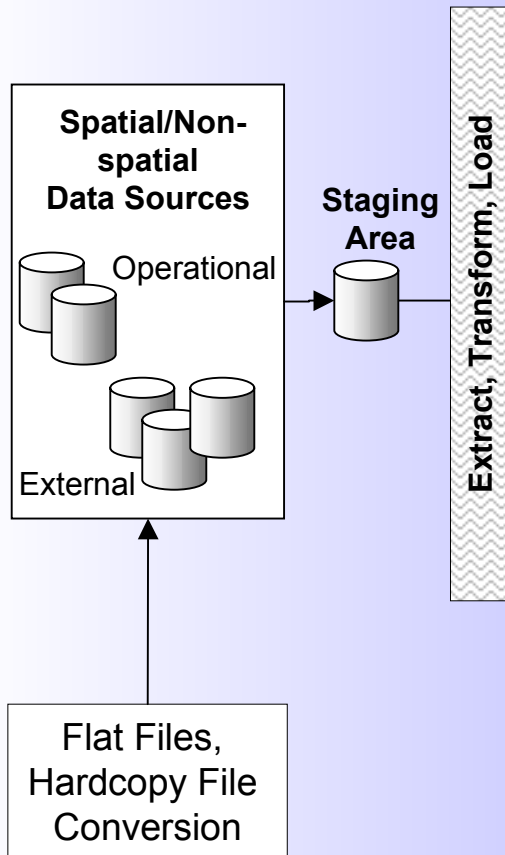


USDA-NRCS-NCGGC

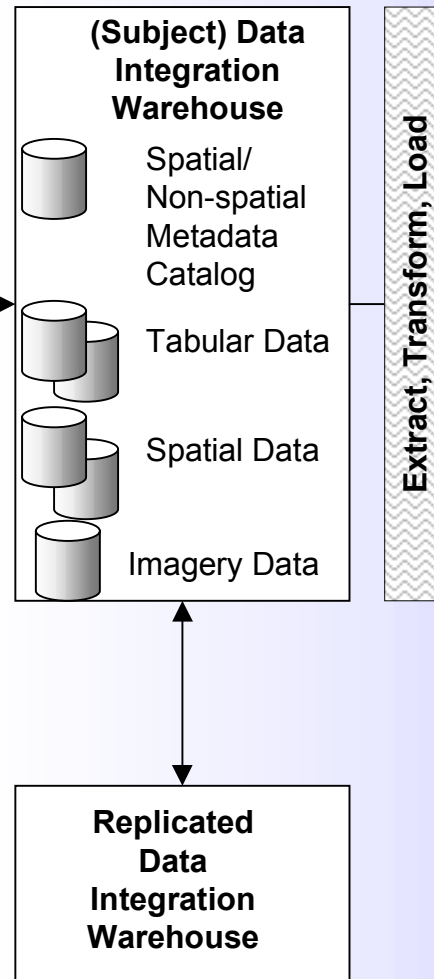


FRAMEWORK for ORGANIZING and MANAGING GEOSPATIAL DATA

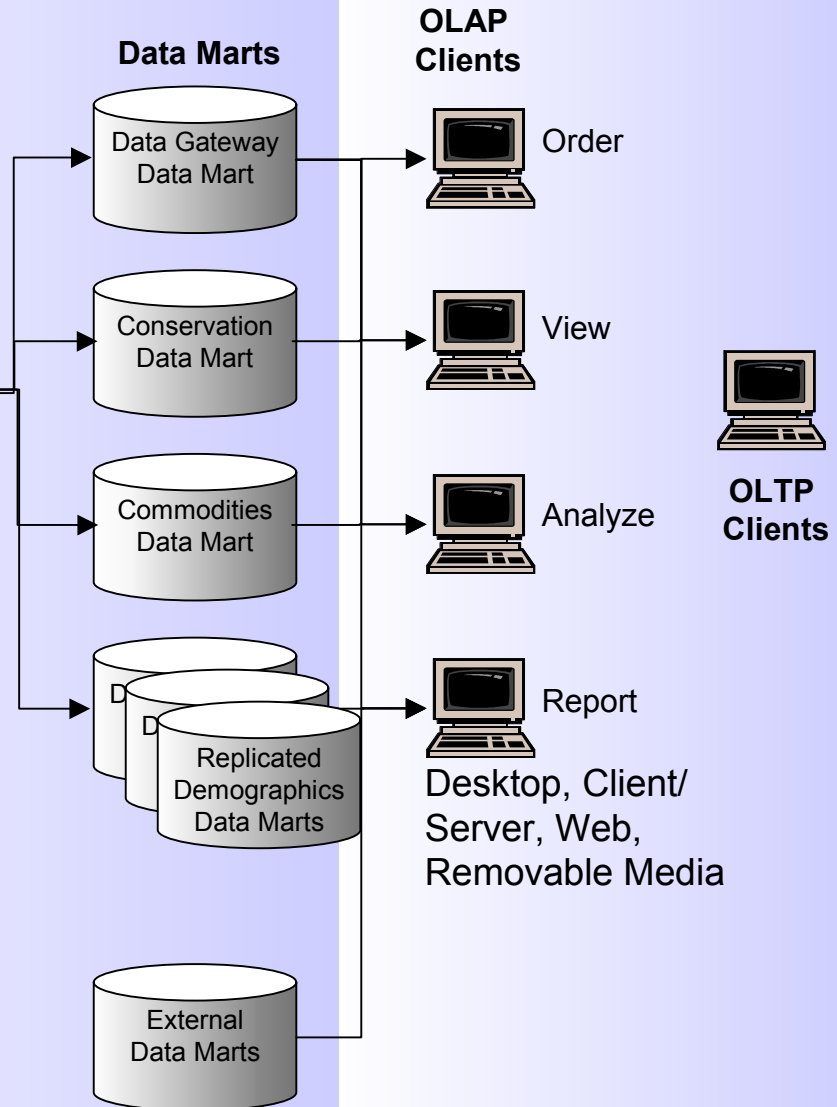
ACQUISITION AND INTEGRATION



STORAGE & MANAGEMENT



ACCESS





USDA-NRCS-NCGC



USDA:NRCS:Geospatial Data Gateway:home - Microsoft Internet Explorer provided by ESRI

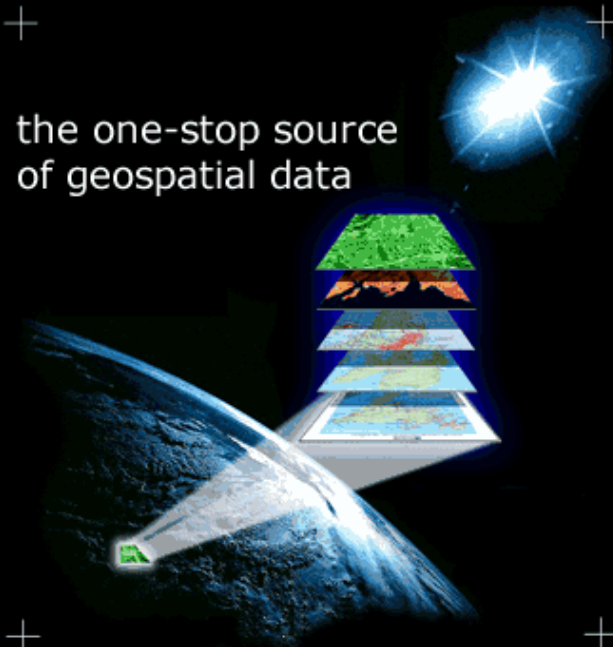
File Edit View Favorites Tools Help


Back Forward Stop Refresh Home Search Favorites History Mail Print Edit

Address <http://lighthouse.nrcs.usda.gov/gateway/gatewayhome.html> Go Links »

Geospatial


the one-stop source
of geospatial data





The Geospatial Data Gateway provides Internet-based, One Stop Shopping for natural resource or environmental data. It offers a **single access** point to a vast store of data, allowing you to browse through what is available, choose only the area that is needed, order it in the desired projection and format, and have it automatically delivered electronically or via CD.

About News **Get Data** Lighthouse Contact

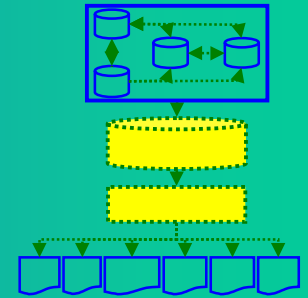


United States Department of Agriculture
Service Center Initiative

Natural Resources Conservation Service
Farm Services Agency
Rural Development

<http://lighthouse.nrcs.usda.gov/gateway/NextPage.asp> Internet

Soil Data Warehouse



Resource Data Gateway

Orthoimagery

Soils

Climate

Plant/
Crop

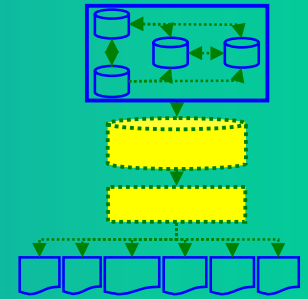
Census

TIGER

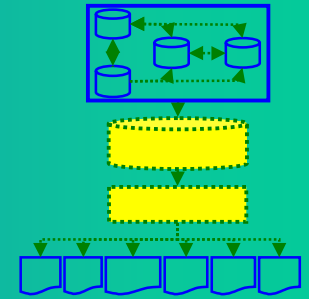
Natural Resource Data Warehouse

Fort Collins Web Farm / Fort Worth Data Center

Soil Data Warehouse

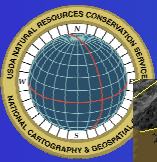


- ◆ Single source for distributing soil data
 - Deliver consistent soil data for all products
 - Build infrastructure and implement warehouse in FY2002
- ◆ Integration of Other Resource Databases
 - Plant information
 - Climate information
 - Orthoimagery

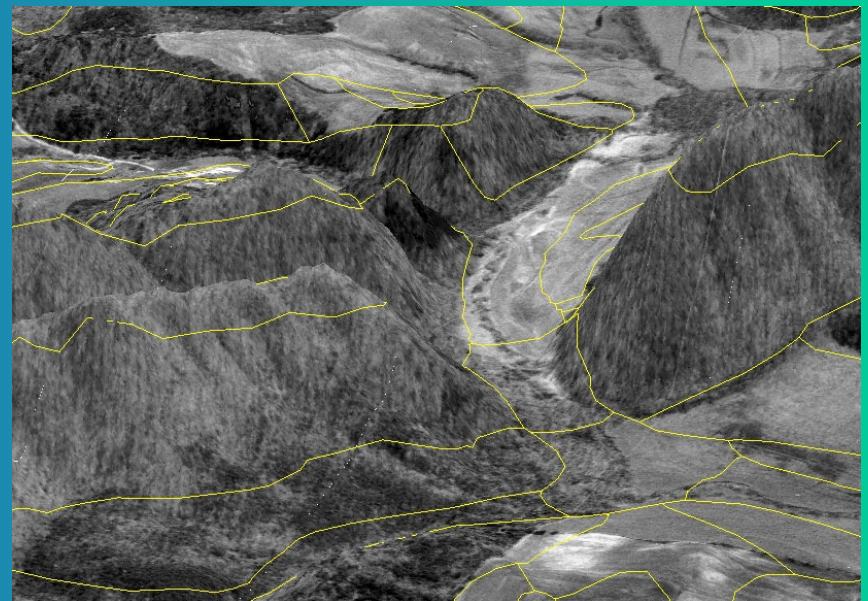
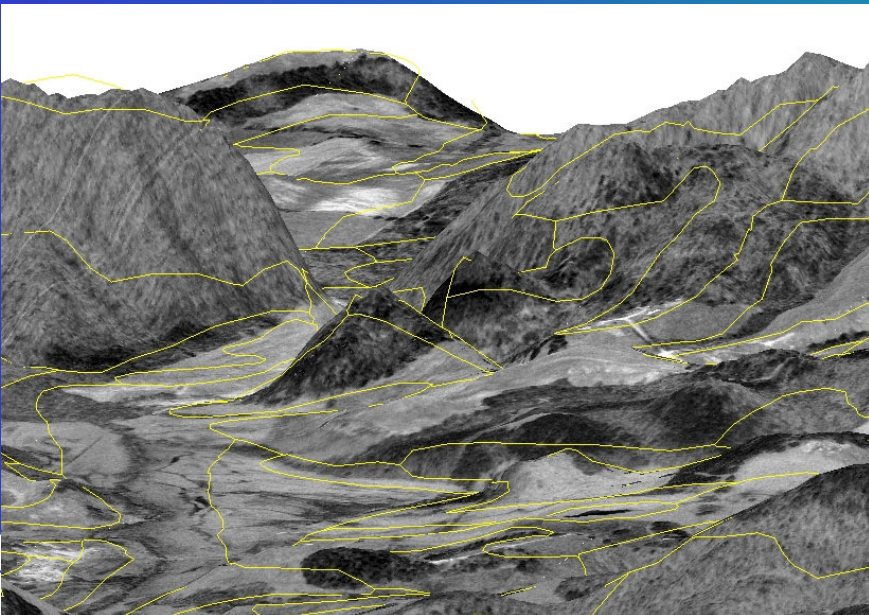
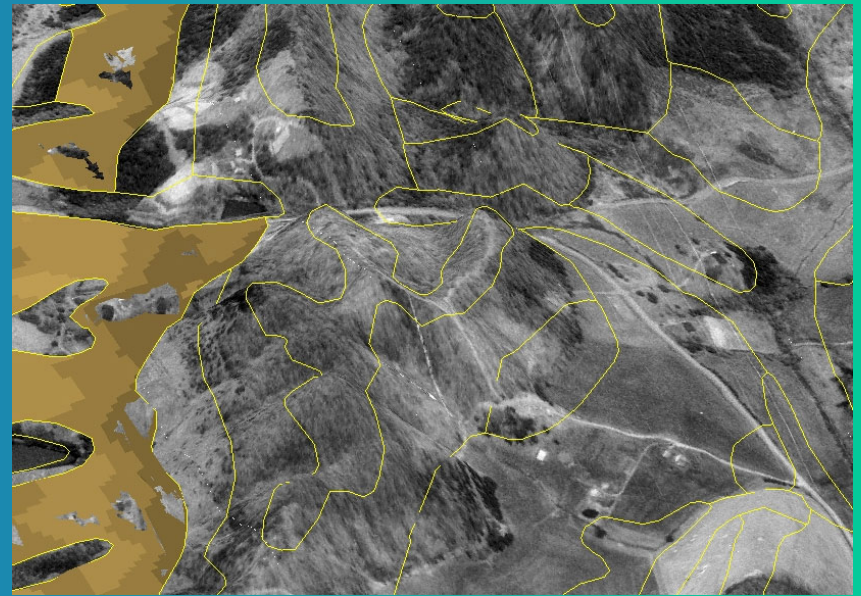
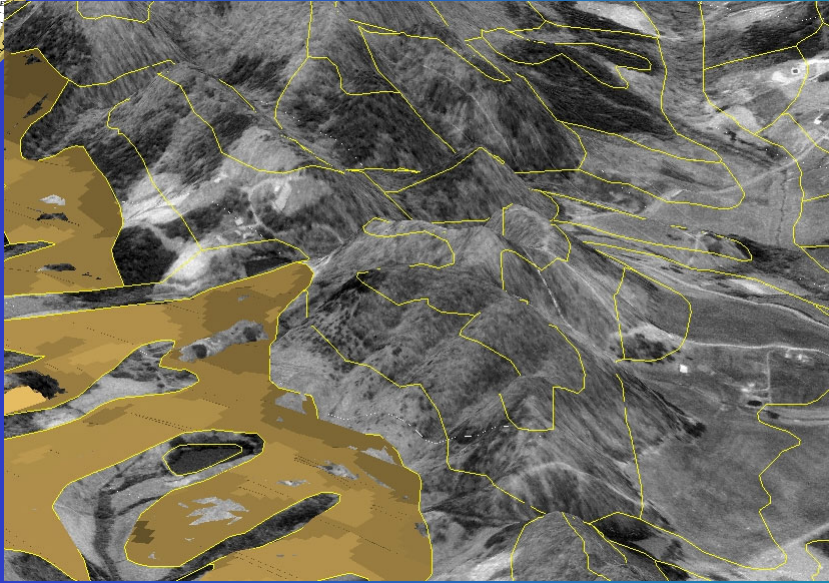


Resource Data Gateway

- ◆ Single access to data
 - Catalogue of all resource data for a specific geographic area
 - Data may be located at multiple physical locations
- ◆ Select and order data
 - Select one or more data sets
 - Specify delivery options: ftp, CD-ROM
 - <http://lighthouse.nrcs.usda.gov/gateway/>



Soil Landscape Visualization with ArcScene



USDA-NRCS-NCGC

Example of Navigation



Example of Navigation



Slope Range Shapefile

good_slope - ArcMap - ArcInfo

File Edit View Insert Selection Tools Window Help

Spatial Analyst Layer: good_83_ft

1:12,000

Layer: goodfield_slope3 Editor Task: Create New Feature Target:

New Data Frame

D:\WorkSpace\pedology\slo

☒ goodfield_slope3

GRIDCODE

2

5

12

15

30

70

☐ goodfield_0_2slp

d:\workspace\pedology\slop

☒ good_hill

Value

High : 254

Low : 0

☒ good_83_ft

Value

High : 1184.079956

Low : 682.239990

Display Source

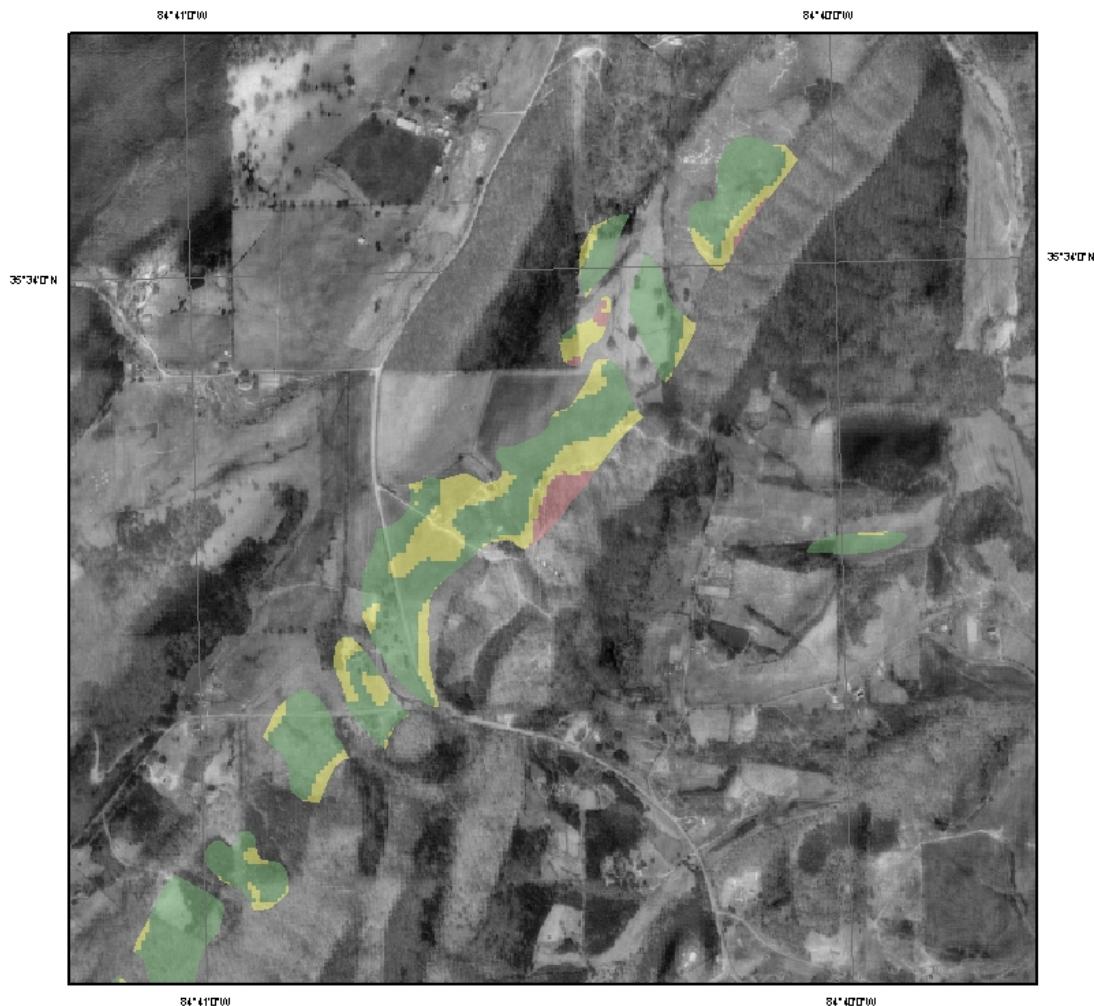


USDA-NRCS-NCGC



Quantification of Slope Inclusions

Example of Soil Map Unit Inclusion Determination Using Slope Derived From 10 Meter DEM



MapUnit/Slope Inclusions

- Dissimilar 0 to 2%
- Similar 2 to 5%
- 5 to 12%
- Similar 12 to 20%
- Dissimilar 30 to 60%
- Dissimilar >60%

Extent and acreage of Apison-Sunlight complex, 5 to 12 percent slope for the Tranquility Quadrangle, McMinn Co., TN

Slope Range	Acres	Percent of Map Unit
2 to 5%	4.4	1.0
5 to 12%	64.0	14.1
12 to 20%	294.5	64.7
20 to 30%	83.8	18.4
30 to 60%	8.6	1.9
>60%	0.2	0.0
Total	455.5	100.1





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THE END

